Supporting Information

Multi organoids-on-a-chip from hiPSCs for assessment of prenatal

antidepressant clomipramine

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**Table S1.** Lists of antibodies used for immunostaining.

Primary antibodies	Supplier	Reference	Species	Dilution
albumin	Bethyl	A80-129A	Goat	1:1000
CYP3A4	Absin	abs132219	Mouse	1:500
active caspase 3	Abcam	ab32042	Rabbit	1:250
cardiac troponin T	Thermo	MA5-12960	Rabbit	1:200

Secondary antibodies	Supplier	Reference	Dilution
Cy3-labeled Donkey Anti-Goat lgG (H+L)	Beyotime	A0502	1:50
Anti-rabbit lgG (H+L), F(ab')2 Fragment (Alexa Fluor^R 488 Conjugate)	Cell Signaling	4412	1:500
Anti-rabbit lgG (H+L), F(ab')2 Fragment (Alexa Fluor^R 594 Conjugate)	Cell Signaling	8889	1:500
Anti-mouse lgG (H+L), F(ab')2 Fragment (Alexa Fluor^R 488 Conjugate)	Cell Signaling	4408	1:500
Anti-mouse lgG (H+L), F(ab')2 Fragment (Alexa Fluor^R 594 Conjugate)	Cell Signaling	8890	1:500
DAPI	Cell Signaling	4083	1:10000

Table S2. Primer pairs used to examine mRNA expression of specific genes during the development of liver organoids.

Primer	Forward sequence (5'- 3')	Reverse sequence (5'- 3')
NANOG	GATTTGTGGGCCTGAAGAAA	CTTTGGGACTGGTGGAAGAA
OCT4	GGAGAAGCTGGAGCAAAACC	TGGCTGAATACCTTCCCAAA
SOX17	GTGGACCGCACGGAATTTG	GGAGATTCACACCGGAGTCA
FOXA2	CGACTGGAGCAGCTACTATGC	TACGTGTTCATGCCGTTCAT
AFP	CTTTGGGCTGCTCGCTATGA	GCATGTTGATTTAACAAGCTGCT
ALB	GCCTTTGCTCAGTATCTT	AGGTTTGGGTTGTCATCT
PXR	AAGCCCAGTGTCAACGCAG	GGGTCTTCCGGGTGATCTC
HNF-α		
CYP1A2	GCCATTAACAAGCCCTTGAG	ATGGCCAGGAAGAGGAAGAT
CYP2D6	CCTTCGCCAACCACTCC	GCAGAAAGCCCGACTCCT
CYP2C19	CGGATTTGTGTGGGAGAGGG	GCAAATCCATTGACAACAGGAGTT
CYP3A4	TTCAGCAAGAAGAACAAGGACAA	GGTTGAAGAAGTCCTCCTAAGC
β-Actin	AAATCTGGCACCACACCTTC	AGAGGCGTACAGGGATAGCA
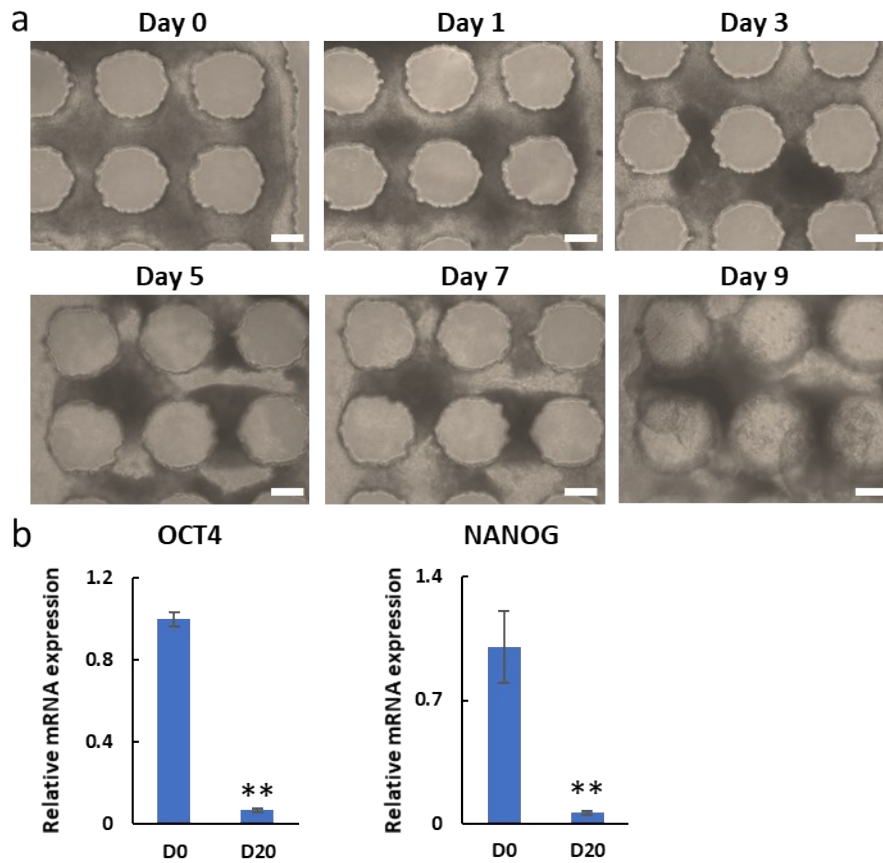
Figure S1. Characterization of hiPSCs-derived cardiac organoids a, Bright field images of cardiac differentiation from day 0 to day 9. Scale bars: 200 μm. **b,** Examination of the pluripotency markers OCT4A and NANOG at 0 and 20 days of differentiation. The expression values were normalized to the β-actin expression level. n = 3 replicates. Data are shown as mean ± SD. **, P-value <0.01.
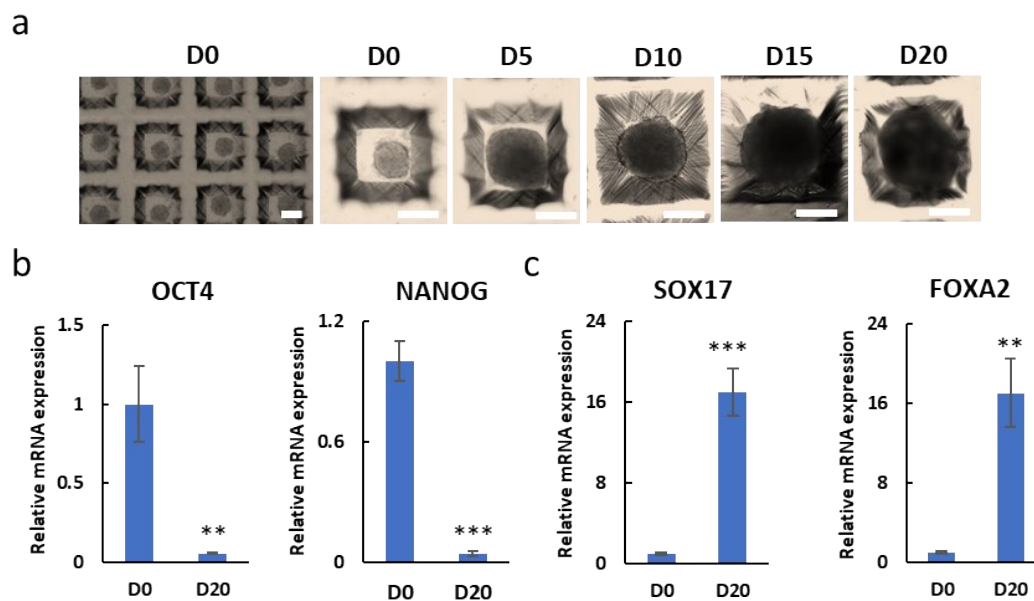
Figure S2, Characterization of hiPSCs-derived liver organoids a, The representative bright field

images of the spheroids were obtained at different stages of liver organoid generation. Scale bars: 200 μm. **b-c**, mRNA expression of pluripotent markers OCT4 and NANOG (**b**), endodermal markers SOX17 and FOXA2 (**c**) was quantified by RT-PCR. The expression values were normalized to the β-actin expression level. n = 3 replicates. Data are shown as mean ± SD. **, P-value < 0.01 ***, P-value < 0.001.
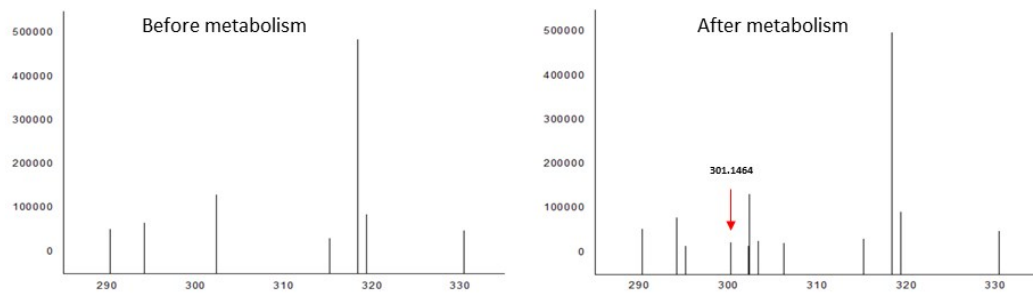

Figure S3. MS detection of clomipramine before and after liver metabolism. The peak of desmethylclomipramine (m/z 301) was observed only after liver metabolism.